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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/633,756 | 08/07/2000 | Sharon Duvdevani | U 012894-7 | 3691 |

140 7590 02/16/2006

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EXAMINER

CARTER, AARON W

ART UNIT PAPER NUMBER

2625

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/633,756 ✓

Applicant(s)

DUVDEVANI ET AL.

Examiner

Aaron W. Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 34-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34-38 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7 is/are rejected.
- 7) ☐ Claim(s) 5, 6 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to papers filed on November 29, 2005.

Response to Amendment

2. In response to applicant's amendment received on November 29, 2005, all requested changes to the specification and claims have been entered. Claims 34-38 have been added.

Response to Arguments

3. Applicant's arguments filed November 29, 2005 have been fully considered but they are not persuasive.
4. Applicants argue that the prior art of Tokita, already of record, does not teach or fairly suggest a "reference image comprising an at least partially vectorized first representation of boundaries representing said representative object".

Examiner disagrees. In the prior art of Tokita, the gradient vectors are derived from multiple valued pattern data and high gradient areas represented in gradient vectors A and B would indicate the boundaries between different valued pattern data such as pattern edges. Therefore the examiner feels that the gradient vector maps could be considered images comprising a representation of the boundaries for the representative object and the object under inspection. See also column 11, lines 20-25 of Tokita.

5. Applicants argue that the prior art of Tokita does not teach or fairly suggest generating a “representation of boundaries of known elements in an image”.

Examiner disagrees. As discussed above, high gradient areas represented in gradient vectors A and B would indicate the boundaries between different valued pattern data, and a comparison of the difference between gradients and a threshold would indicate the location of unexpected boundaries and this would correspond to the analysis of a location of boundaries in the representation of boundaries in an effort to detect defects.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 4,958,374 to Tokita et al. (“Tokita”).

As to claim 1, Tokita discloses a method for inspecting objects, the method comprising:

Creating reference image for a representative object, said reference image comprising an at least partially vectorized first representation of boundaries representing said representative object (column 4, lines 11-15 and lines 42-53 and Fig. 4, wherein the map of gradient vectors for the reference pattern data corresponds to the reference image and vector B corresponds to the first representation of boundaries);

Acquiring an image of an object under inspection comprising a second representative of boundaries representing said object under inspection (column 3, line 66 – column 4, line 11, column 4, lines 22-33 and Fig. 2, wherein vector A corresponds to the second representation of boundaries); and

Comparing a location of at least some boundaries in the second representation of boundaries to a location of corresponding boundaries in said at least partially vectorized first representation of boundaries (column 4, lines 55-64), thereby to identify defects (column 5, lines 9-15).

As to claim 3, Tokita discloses a system for image processing comprising:

A boundary identifier operative to generate a representation of boundaries of known elements in the image (column 3, line 66 – column 4, line 11, (column 4, lines 22-33, Fig. 2 and Fig. 17);

A hardware candidate defect identifier operative to identify at least some candidate defects in the image, in hardware (column 4, lines 55-64 and Fig. 17, elements 9 and 10); and

A software candidate defect inspector receiving an output from the hardware candidate defect identifier and analyzing a location of boundaries in said representation of boundaries to identify at least one false within said output, in software (column 4, line 64 – column 5, line 15 and Fig. 17, element 21).

As to claim 4, Tokita disclose a system according to claim 3, wherein the boundary identifier comprises a hardware boundary identifier operative to generate a representation of

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boundaries of known elements in the image, in hardware (column 3, line 66 – column 4, line 11, (column 4, lines 22-33, Fig. 2 and Fig. 17).

As to claim 7, Tokita discloses a system according to claim 3, wherein said hardware candidate defect identifier employs said representation of boundaries in order to identify at least some candidate defects (column 4, lines 55-64 and Fig. 17).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokita

As to claim 2, Tokita discloses a method according to claim 1, wherein the comparing employs a variable threshold for acceptable distance between corresponding portions of the boundaries in the first and second representations (column 5, lines 7-15 and column 7, line 67 – column 8, line 8).

Tokita does not disclose expressly wherein the variable threshold is user-selected.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the user select the threshold. Applicant has not disclosed that have the user select the threshold, as opposed to the system automatically selecting it, provides an advantage, is used

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for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the system selecting the threshold because selecting the threshold is based solely on the minimum value of gradient vector differences.

Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify the invention of Tokita with to obtain the invention as specified in claim 2.

Allowable Subject Matter

9. Claims 34-38 are allowed.

10. The following is an examiner's statement of reasons for allowance:

As to claim 34, none of the prior art teach or fairly suggests the limitation of "a software candidate defect identifier operative to identify at least some candidate defects in the image, in software" in combination with the hardware defect identifier and other limitations of the claim. The prior art of Tokita discloses a system for image processing including a hardware candidate defect identifier operative to identify at least some candidate defects in the image, in hardware (column 4, lines 55-64 and Fig. 17, elements 9 and 10). However, Tokita does not teach or fairly suggest the limitation of a software candidate defect identifier as disclosed in claim 34.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. Claims 5, 6 and 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W. Carter whose telephone number is (571) 272-7445. The examiner can normally be reached on 8am - 4:30 am (Mon. - Fri.).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JINGGEWU
PRIMARY EXAMINER

